ATS Problem Series

by

ATS Team
LANL

DRAFT

January 3, 2014

Series 1: 1D

1D-1: subsurface

- seasonal forcing, multi-year
- test domain depth
- evaluate parameters, uncertainty

Series 2: 2D

2D-1: subsurface

- identical to 1D-1, but in 2D

2D-2: surface + subsurface + SEB

- seasonal forcing via SEB Met Data, multi-year
- test snow distribution

Series 3: Single Polygon

SP-1: hydrology

- specify permafrost depth
- constrain hydrology parameters using NGEE data

SP-2: thermal

- evolve permafrost depth
- constrain thermal parameters using NGEE data

SP-3: permafrost characteristics

- attempt to reproduce broad permafrost characteristics
- active layer shape (sign/magnitude of deviation from topography)

Series 4: Lobster Watershed

LW-1: resolution

- compare coarse and fine resolution simulations

LW-2: performance

- performance tuning of all components

Series 5: Area C

AC-1: overland flow

- surface flow on all of Area C

Series 6: Bio-geo-chemistry

BGC-1: chemistry only

- chemistry only, no transport
- likely one-way coupled or post-processed – given soil moisture and temperature, do chemistry

BGC-2: chemistry + transport

- Amanzi transport coupled to our chemistry

Series 7: Deformation

D-1: deformation only

- test of deformation algorithm
- ensure porosity > 0

D-2: deformation + flow

- test coupling

D-3: deformation + energy

- ensure conservation of energy via change in rock thermal properties

D-4: fully coupled, single polygon

- full simulation